

**PROPOSED  
RULE 1110.3**

**EMISSIONS FROM LINEAR GENERATORS**

(a) Purpose

The purpose of this rule is to reduce emissions of Oxides of Nitrogen (NO<sub>x</sub>), Volatile Organic Compounds (VOCs), and Carbon Monoxide (CO) from Linear Generators.

(b) Applicability

All Linear Generators are subject to this rule.

(c) Definitions

- (1) BREAKDOWN means a physical or mechanical failure or malfunction of a Linear Generator, air pollution control equipment, or related operating equipment that is not the result of operator error, neglect, improper operation or improper maintenance procedures, which may lead to excess emissions beyond rule related emission limits or permit conditions.
- (2) DAILY means the time period starting at 12 midnight and continuing through 11:59 p.m.
- (3) DIGESTER GAS means gas that is produced by anaerobic decomposition of organic material.
- (4) FACILITY means any source or group of sources or other air contaminant emitting activities which are located on one or more contiguous properties within the South Coast AQMD, in actual physical contact or separated solely by a public roadway or other public right-of-way, and are owned or operated by the same person (or by persons under common control), or an outer continental shelf (OCS) source as determined in Section 55.2 of Title 40, Part 55 of the Code of Federal Regulations (40 CFR Part 55). Such above-described groups, if noncontiguous, but connected only by land carrying a pipeline, shall not be considered one Facility.
- (5) LANDFILL GAS means any gas derived through a natural process from the decomposition of waste deposited in an MSW Landfill.
- (6) LINEAR GENERATOR means any power generation technology that uses a thermochemical reaction to create linear motion that is directly converted into electricity.

- (7) MUNICIPAL SOLID WASTE or MSW LANDFILL means an entire disposal Facility in a contiguous geographical space where solid waste is placed in or on land. An MSW Landfill may be active, inactive, or closed.
  - (A) Active MSW Landfill means a Municipal Solid Waste Landfill that has received solid waste on or after November 8, 1987.
  - (B) Inactive MSW Landfill means a Municipal Solid Waste Landfill that has not accepted solid waste after November 8, 1987 and subsequently no further solid waste disposal activity has been conducted within the disposal Facility.
  - (C) Closed MSW Landfill means a Municipal Solid Waste Landfill that has ceased accepting solid waste for disposal and the closure was conducted in accordance with all applicable federal, state and local statutes, regulations, and ordinances in effect at the time of closure.
- (8) NATURAL GAS means a mixture of gaseous hydrocarbons, with at least 80 percent methane by volume, and of pipeline quality, such as the gas sold or distributed by any utility company regulated by the California Public Utilities Commission.
- (9) OPERATING CYCLE means a period of time within which a round of regularly recurring events is completed, and cannot be stopped without the risk of endangering public safety or health, causing material damage to the equipment or product, or cannot be stopped due to technical constraints. Economic reasons alone will not be sufficient to extend this time period. The Operating Cycle includes batch processes that may start and finish several times within a twenty-four hour period, in which case each start to finish interval is considered a complete cycle.
- (10) OXIDES OF NITROGEN (NO<sub>x</sub>) means the sum of nitric oxides and nitrogen dioxides emitted, collectively expressed as nitrogen dioxide emissions.
- (11) TUNING means adjusting, optimizing, rebalancing, or other similar operations to an electric generating Unit or an associated control device or as otherwise defined in the Permit to Operate. Tuning does not include normal operations to meet load fluctuations.
- (12) UNIT means any Linear Generator.
- (13) VOLATILE ORGANIC COMPOUND (VOC) as defined in Rule 102 – Definition of Terms.

(d) Emission Limits

- (1) An owner or operator of a Unit shall not operate it in a manner that exceeds the NO<sub>x</sub>, CO, and VOC emission limits listed in Table 1: Concentration Limits for Linear Generators, pursuant to subdivision (f):

**Table 1: Concentration Limits for Linear Generators**

<b>Units Installed on and after [Date of Adoption]</b>			
<b>Fuel Type</b>	<b>NO<sub>x</sub> (ppmv)<sup>1</sup></b>	<b>CO (ppmv)<sup>1</sup></b>	<b>VOC (ppmv)<sup>2</sup></b>
Natural Gas, Propane Gas, Hydrogen Gas, Landfill Gas, and Digester Gas	2.5	12	10

<sup>1</sup> Parts per million by volume, corrected to 15% oxygen on a dry basis and averaged over 15 minutes.

<sup>2</sup> Parts per million by volume, measured as carbon, corrected to 15% oxygen on a dry basis, and averaged over the sampling time required by the test method.

- (2) An owner or operator shall shut down a Unit having a Breakdown that results in emissions in excess of those allowed by Table 1 by the end of an Operating Cycle, or within 24 hours from the time the operator knew of the Breakdown or excess emissions, or reasonably should have known, whichever is sooner.

(e) Maintenance Requirements

- (1) An owner or operator of a Unit shall perform maintenance per manufacturer’s recommendations as specified in the operating and maintenance manual.
- (2) An owner or operator of a Unit shall keep a copy of the manufacturer’s operating manual and make it available to South Coast AQMD upon request.

(f) Source Testing

- (1) An owner or operator of a Unit shall conduct source testing for NO<sub>x</sub>, VOC reported as carbon, and CO concentrations (concentrations in ppm by volume, corrected to 15 percent oxygen on dry basis) at least once every two years from the date of the previous source test, no later than the last day of the calendar month that the test is due, or every 8,760 operating hours, whichever occurs first. The source test schedule may be changed under the following circumstances:

- (A) An owner or operator of a Unit may elect to reduce the source test frequency to once every three years if the Unit has operated less than 2,000 hours since the last source test; and
  - (B) An owner or operator of a Unit that has not been operated before the date a source test is due, shall conduct a source test by the end of seven consecutive days or 15 cumulative days of resumed operation.
- (2) An owner or operator of a Unit shall conduct the source test by using a contractor that is approved under the South Coast AQMD’s Laboratory Approval Program (LAP) for the test methods specified in Table 2: Testing Methods, or any test methods approved by CARB and EPA, and authorized by the Executive Officer.

**Table 2: Testing Methods**

<b>Pollutant</b>	<b>Method</b>
NOx	South Coast AQMD Method 100.1
CO	South Coast AQMD Method 100.1
VOC	South Coast AQMD Method 25.1* or Method 25.3*

\*Excluding ethane and methane

- (3) An owner or operator of a Unit shall submit a source test protocol to the Executive Officer for written approval at least 60 days before the scheduled date of the test. The source test protocol shall include, but not limited to the following:
- (A) Name, address, and phone number of the Unit operator and a South Coast AQMD-approved source testing contractor that will conduct the test;
  - (B) Application number(s), permit number(s), and emission limits;
  - (C) Description of the Unit(s) to be tested and the test methods and procedures to be used;
  - (D) Number of tests to be conducted and under what loads; and
  - (E) Required minimum sampling time for the VOC test, based on the analytical detection limit and expected VOC levels.
- (4) An owner or operator of a Unit shall conduct the testing after the receipt of source test protocol approval from the Executive Officer. If an owner or operator submits the protocol by the required date, and the Executive Officer takes longer than 60

days to approve the protocol, the owner or operator shall be allowed the additional time needed to conduct the test.

- (5) In lieu of meeting the requirements in paragraph (f)(3), an owner or operator of a Unit may elect not to submit a source test protocol for approval if:
  - (A) There is a previously approved protocol for the Unit that meets the requirements in subparagraphs (f)(3)(A) through (f)(3)(E); and
  - (B) The Unit has not been altered in a manner that requires a permit modification.
- (6) An owner or operator of a Unit shall provide South Coast AQMD at least 30 days prior notice of any source test to afford South Coast AQMD the opportunity to have an observer present. If, after the 30 days prior notice is given, there is a delay (due to operational problems, etc.) in conducting the scheduled source test, the owner or operator of a Unit shall notify South Coast AQMD as soon as possible of any delay in the original test date, either by providing notice of the rescheduled date of the source test at least seven days prior, or by arranging a rescheduled date mutually agreed upon with South Coast AQMD.
- (7) An owner or operator of a Unit shall provide source testing facilities as follows:
  - (A) Sampling ports adequate for the applicable test methods. This includes constructing the air pollution control system and stack or duct such that pollutant concentrations can be accurately determined by applicable test methods;
  - (B) Safe sampling platform(s), scaffolding or mechanical lifts, including safe access, that comply with California General Safety Orders; and
  - (C) Utilities for sampling and testing equipment.
- (8) The LAP contractor shall conduct source testing for at least 30 minutes during normal operation (actual duty cycle). This test shall not be conducted under a steady-state condition unless it is the normal operation. In addition, the LAP contractor shall conduct source testing for NO<sub>x</sub> and CO emissions for at least 15 minutes at: a Unit's actual peak load, or the maximum load that can be practically achieved during the test, and at actual minimum load, excluding idle, or the minimum load that can be practically achieved during the test. These additional two tests are not required if the permit limits the Unit to operating at one defined load  $\pm$  10%. The LAP contractor shall not conduct any pre-tests for compliance. If an emission exceedance is found during any of the three phases of the test, that phase

shall be completed and reported. An operator shall correct the exceedance, and the source test may be immediately resumed.

- (9) The LAP contractor shall conduct the source test at least 40 operating hours, or at least 1 week, after any Unit servicing or Tuning.
- (g) **Monitoring, Recordkeeping, and Reporting**
  - (1) **Monitoring**
    - (A) An owner or operator of a Unit shall maintain an operational non-resettable totalizing time meter to determine the elapsed Unit operating time.
    - (B) An owner or operator of a Unit shall maintain a calibrated electric meter that measures the net electrical output of the Unit, which is the difference between the electrical output and the electricity consumed by the auxiliary equipment necessary to operate the Unit.
    - (C) An owner or operator of a Unit shall maintain a parametric monitoring system consisting of an air-to-fuel ratio controller (AFRC), an oxygen sensor, a fuel flow meter, and an air flow meter, which has a malfunction indicator light and audible alarm.
    - (D) An owner or operator of a Unit shall inspect, maintain, and replace all sensors and meters used by the parametric monitoring system per manufacturer's recommendations as specified in the operating manual.
    - (E) An owner or operator of a Unit shall develop and implement procedures for at least Daily monitoring and inspection of:
      - (i) fuel flow rate;
      - (ii) elapsed time meter operating hours;
      - (iii) AFRC system faults, alarms, and any other related emission control malfunctions; and
      - (iv) operating hours since the last source test required by subdivision (f).
  - (2) **Recordkeeping**

An owner or an operator of a Unit shall retain all data logs, source test reports, and other records required by this rule for at least five years and be made available to South Coast AQMD upon request.

    - (A) The owner or operator of a Unit shall maintain records, on a monthly basis, for the following parameters(s) or item(s):
      - (i) Total hours of operation;

- (ii) Type of fuel and quantity of fuel consumption (cubic feet of gas);
    - (iii) Cumulative hours of operation since the last source test required in subdivision (f);
    - (iv) Megawatt-hours of electricity produced; and
    - (v) AFRC system faults, alarms, and any other related emission control malfunctions.
  - (B) An owner or operator of a Unit shall keep records to demonstrate compliance with paragraphs (e)(1) and (f)(9).
  - (C) An owner or operator of a Unit shall keep sufficient operating records to demonstrate that it meets the requirements for extension of the source testing deadlines, pursuant to paragraph (f)(1).
- (3) Reporting
  - (A) The operator shall report to South Coast AQMD, by telephone (1-800 CUT-SMOG or 1-800-288-7664) or other Executive Officer approved method, any Breakdown resulting in emissions in excess of rule or permit emission limits within one hour of such noncompliance or within one hour of the time the operator knew or reasonably should have known of its occurrence. Such report shall identify the time, specific location, equipment involved, responsible party to contact for further information, and to the extent known, the causes of the noncompliance, and the estimated time for repairs. In the case of emergencies that prevent a person from reporting all required information within the one-hour limit, the Executive Officer may extend the time for the reporting of required information provided the operator has notified South Coast AQMD of the noncompliance within the one-hour limit.
  - (B) Within seven calendar days after the reported Breakdown has been corrected, but no later than thirty calendar days from the initial date of the Breakdown, unless an extension has been approved in writing by the Executive Officer, the operator shall submit a written Breakdown report to South Coast AQMD which includes:
    - (i) An identification of the equipment involved in causing, or suspected of having caused, or having been affected by the Breakdown;
    - (ii) The duration of the Breakdown;

- (iii) The date of corrective action and information demonstrating that compliance is achieved;
  - (iv) An identification of the types of excess emissions, if any, resulting from the Breakdown;
  - (v) A quantification of the excess emissions, if any, resulting from the Breakdown and the basis used to quantify the emissions;
  - (vi) Information substantiating whether the Breakdown resulted from operator error, neglect or improper operation or maintenance procedures;
  - (vii) Information substantiating that steps were immediately taken to correct the condition causing the Breakdown, and to minimize the emissions, if any, resulting from the Breakdown;
  - (viii) A description of the corrective measures undertaken and/or to be undertaken to avoid such a Breakdown in the future; and
  - (ix) Pictures of any equipment which failed, if available.
- (C) An owner or operator of a Unit shall submit all source test reports, including a description of the equipment tested, to South Coast AQMD within 60 days of completion of the test.